

CLAIM

1 2 1. An offline-online points system, comprising:

2 a main server for providing a user with an interface to submit a code, wherein the user

3 obtained the code offline and the code is associated with N points; and

4 a code server for maintaining valid codes and verifying that the code that the user

5 submitted is a valid code.

1 2. The system of claim 1, further comprising:

2 a user database that maintains an account of the user, wherein the account balance is M

3 points prior to the user's submission of the code.

1 3. The system of claim 2, wherein the code server updates the account balance to $M+N$

2 points after the user submits the code and if the code server verifies that the code is valid.

1 4. The system of claim 2, wherein the main server updates the account balance to $M+N$

2 points after the user submits the code if the code server verifies that the code is valid.

1 5. The system of claim 2 wherein the code is C letters in length from an alphabet of L

2 letters.

1 6. The system of claim 5 wherein C is 10.

1 7. The system of claim 6 wherein L is 29.

1 8. The system of claim 6 wherein L is 36.

1 9. A method of generating an encrypted code in base L, comprising steps:

2 providing an n-bit raw number;

3 applying a one-way hash function on the n-bit raw number with a first secret key to

4 generate a first string;

5 designating an m-bit portion of the first string as an m-bit validation number; and
6 combining the m-bit validation number and the n-bit raw number to generate a second
7 string.

1 10. The method of claim 9, further comprising steps:
2 applying a DES3 encryption algorithm to the second string with a second secret key to
3 generate a third string; and
4 converting the third string to base L to generate the encrypted code.

1 11. The method of claim 9, wherein $n=32$, $m=16$, and $L=29$.

1 12. The method of claim 9, wherein the one-way hash function is MD5.

1 13. The method of claim 9, wherein the step of combining includes:
2 concatenating the m-bit validation number and the n-bit raw number.

1 14. The method of claim 13, wherein the m-bit validation number is the most significant bit
2 (MSB) portion of the second string. *a*

1 15. The method of claim 9, wherein the m-bit validation number is the m most significant
2 bit (MSB) of the first string.

1 16. A method of verifying the validity of a code, comprising steps:
2 generating a code with encrypted information;
3 providing the code on a hard good to be distributed to users;
4 receiving the code online; and
5 verifying the validity of the code by processing the encrypted information.

1 17. The method of claim 16, wherein the step of generating includes steps:
2 providing an n-bit raw number;
3 applying a one-way hash function on the n-bit raw number with a first secret key to
4 generate a first string;
5 designating an m-bit portion of the first string as an m-bit validation number;

6 combining the m-bit validation number and the n-bit raw number to generate a second
7 string;
8 applying a DES3 encryption algorithm to the second string with a second secret key to
9 generate a third string; and
10 converting the third string to base L to generate the code with the encrypted
11 information.

1 18. The method of claim 17, wherein the step of verifying includes:
2 converting the code in base L to generate a first test code in base 2;
3 decrypting the first test code with the second secret key using a reverse DES3
4 encryption algorithm to generate a second test code;
5 applying the one-way hash algorithm to the second test code to generate a third test
6 code; and

7 comparing a designated m-bit portion of the second test code to a designated m-bit
8 portion of the third test code, and if the comparison is positive, declaring the code to be valid.

1 19. The method of claim 18, wherein the m-bit validation number is the m most significant
2 bit (MSB) of the first string in the generating step and the designated m-bit portion is the most
3 significant bit portion of the second test code and third test code in the comparing step.

1 20. A method for awarding incentive points to a user, comprising steps:
2 generating a code with encrypted information;
3 providing the code to an entity for printing on a hard good;
4 receiving the code submitted by the user; and
5 verifying the validity of the code by processing the encrypted information.

1 21. The method of claim 20, wherein the step of generating includes steps:
2 providing an n-bit raw number;
3 applying a one-way hash function on the n-bit raw number with a first secret key to
4 generate a first string;
5 designating an m-bit portion of the first string as an m-bit validation number;

6 combining the m-bit validation number and the n-bit raw number to generate a second
7 string;
8 applying a DES3 encryption algorithm to the second string with a second secret key to
9 generate a third string; and
10 converting the third string to base L to generate the code with the encrypted
11 information.

1 22. The method of claim 21, wherein the step of verifying includes:
2 converting the code in base L to generate a first test code in base 2;
3 decrypting the first test code with the second secret key using a reverse DES3
4 encryption algorithm to generate a second test code;
5 applying the one-way hash algorithm to the second test code to generate a third test
6 code; and *a*
7 comparing a designated m-bit portion of the second test code to a designated m-bit
8 portion of the third test code, and if the comparison is positive, declaring the code to be valid.
1 23. The method of claim 22, wherein the m-bit validation number is the m most significant
2 bit (MSB) of the first string in the generating step and the designated m-bit portion is the most
3 significant bit portion of the second test code and third test code in the comparing step.

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